

# SOS Remote App

## User Manual

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<https://sos.noaa.gov>

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# Overview

The iOS Remote Control App for Science On a Sphere® (SOS) is an alternative to using the Wii controller to control an SOS system. It is a universal app that runs on either the iPhone, iPod Touch, or iPad. It can do everything the Wii does, but in a different fashion. In addition, the SOS Remote app has some features that the Wii does not. For example, the app can display the current playlist, allowing the user to jump from one clip to any another within the playlist. Unlike the Wii, which uses Bluetooth as its means of communicating with SOS, the SOS Remote app uses Wi-Fi Internet access.

## System Requirements

To be useful, this app requires access to a Science On a Sphere® (SOS) installation. For further information about SOS, see our web site at <http://sos.noaa.gov>. The app does nothing interesting until it is connected to a running SOS system.

### SOS Software Version

For full functionality of this app, please update your SOS computer to release version 3.4.2.

### Wi-Fi Access

The app requires Wi-Fi access to the SOS computer that is being controlled (specifically TCP port 2468). Simultaneous outbound Wi-Fi access from the device to the Internet at large (or at least to the SOS web servers at <http://sos.noaa.gov>) is also desirable for some features of the app, but it is not required for basic remote control of SOS.

There are two basic approaches to getting that Wi-Fi access. The first is to use the existing Wi-Fi infrastructure at your site. The second is to add a Wi-Fi router to your SOS installation. In either case, you will want to consult with your network and security team for advice on the best approach for Wi-Fi connectivity at your site. In extreme cases, Wi-Fi network security policies may entirely preclude the use of the SOS Remote app. A direct connection to a dedicated Wi-Fi router is preferred for performance reasons, since the remote control protocol is “chatty”

and sends lots of messages back and forth between the device and the SOS computer.

### **Using Existing Wi-Fi Infrastructure**

If your site has an existing Wi-Fi infrastructure, you may be able (or required by policy) to use it to connect to your SOS system. The details of this will be specific to your site, so you will need to consult with your networking team for the specifics at your site. Many sites have multiple Wi-Fi networks, typically a low-security one for visitors and casual access, and one or more high-security for access to internal computers at the site. You will want to use the one that provides network access to your active SOS computer (TCP port 2468). There will be network passwords and/or VPN instructions that are specific to your site. See your network team for the details.

### **Adding a Wi-Fi Router to SOS**

For the most responsive control of your SOS system by the app, you can connect a Wi-Fi router directly to your SOS computer. Doing this in a secure way requires some network expertise, so be sure to consult with your network team before attempting this. You may need to select a Wi-Fi channel that doesn't conflict with other Wi-Fi networks, for example. Using the minimum transmitter power that you need is always a good idea. And WPA2 encryption is probably the minimum level of encryption you will want to use. You might want to turn off the beacon identifier for your Wi-Fi router to make it less obvious to casual visitors at your site. You might also consider limiting access to the specific MAC addresses of your portable devices. The details of router configuration are beyond the scope of this document, so consult with your network team when in doubt.

The SOS computer has two network interfaces: one to the external Internet, and one for a private subnet. For maximum functionality, connect the router between the external Internet and the SOS computer. This will allow your remote control to access both the SOS computer and the Internet at large. The default NAT (Network Address Translation) of the router will allow both the SOS computer and the Wi-Fi devices to share the Internet connection. You may need to change the outward IP address configuration of your SOS system.

As an alternate but less desirable approach, you can connect the router to the private subnet. This provides maximum security in the event your router is compromised, since the private network doesn't allow connecting beyond the SOS computer. The downside is that a number of features of the app will not be available (for example, thumbnail images for datasets will not be shown). But the basic remote control of the sphere will still work.

# Configuring the App

In order to control Science on a Sphere from your iPhone, iPod Touch, or iPad device, you must configure your device to communicate with your SOS computer. To get started, tap on the Settings icon on the homepage of your device, and then tap on SOS Remote located under the Apps category. In the Name or IP field under SOS computer to control, enter the host name or IP address of your SOS computer.

Now, return to the homepage and tap on the SOS Remote app icon to open the application. Tap on the Settings icon located in the tab bar to open the SOS Settings page. The host name or IP address you just entered should appear under the section labeled Connection.

If the Connection switch is set to OFF, tap the ON/OFF slider to the ON position. This should initiate the connection between the device and the SOS computer.

**NOTE: If at any point the device is unable to connect to the SOS machine, a red badge with a question mark will automatically appear on top of the Settings tab.**

## Using the App

Once a connection has been established between your device and the SOS computer, you are now ready to control the SOS display.

### Orientation

Tap on the Presentation icon located in the tab bar. This will open the SOS Presentation page, which consists of orientation and playback controls.

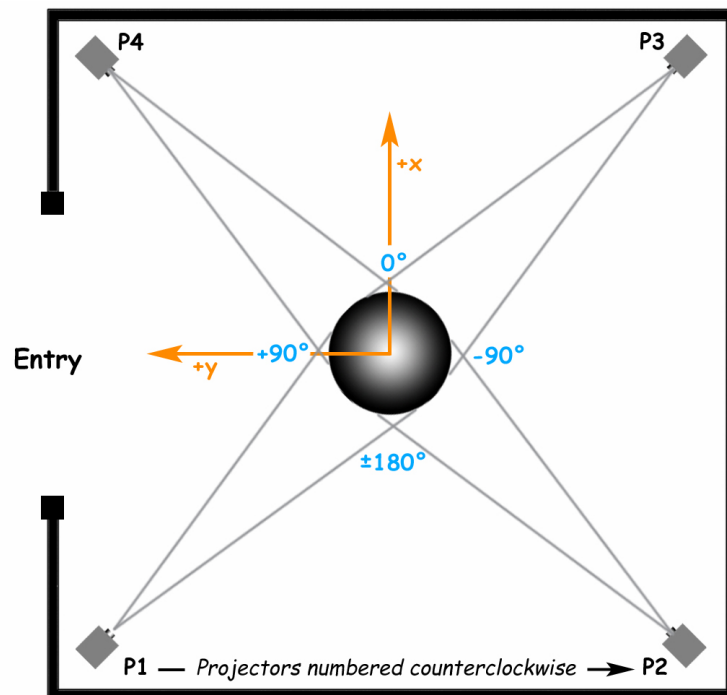
Before manipulating the orientation of the sphere, first use the User Position slider control to set your desired viewing position relative to the sphere. (Note: On the iPhone/iPod Touch, tap on the User Pos icon to access the slider control dialog.) When you tap and hold on the slider circle, a red dot will appear along the equator of the sphere (the default position places the red dot on the positive x-axis of the sphere at the equator, which corresponds to 0 degrees longitude). Move the slider left or right until you see the red dot in front of you or at any other

desired location on the sphere. Now, all future orientation adjustments will occur relative to this view position. See diagram below.

To adjust the orientation of the sphere, simply slide one finger over the arrows indicated on the track pad. With the default 0 degree User Position, the up-down arrows tilt the sphere around the y-axis (pitch), the left-right arrows rotate the sphere around the z-axis (yaw), and the two arrows on either end of the track pad tilt the sphere around the x-axis (roll). Again, all rotations are relative to the User Position you selected using the slider control.

To automatically rotate a time-series dataset around the z-axis (the axis that passes through the north and south poles), tap the Z-Rot button. Note that the automatic z-rotation will only be active when a time-series dataset is animating.

To reset the orientation of the sphere back to its default position, tap the Reset button.



#### Setting a User Position Offset

By default, the User Position slider on the Presentation page is centered at 0 degrees longitude and extends to -180 and +180 degrees along the equator. If a site tends to present datasets to an audience around the +/- 180 degree location, they have to keep moving the slider to the far left and far right as they move. To make

presentation more convenient, you can set an offset position for the slider. From the home page of your device, tap on the Settings icon and select SOS Remote. Then, tap on Default User Position to select the desired offset.

## Playback

Tap on the Presentation icon located in the tab bar to open the SOS Presentation page. To pause or play a dataset, either tap the Pause/Play button, or use a two-finger single tap gesture in the track pad area.

To step forward or backward frame-by-frame, tap the forward and backward buttons, respectively. To fast forward or fast rewind quickly, tap and hold the forward and backward buttons, respectively. Note that tapping the forward or backward buttons will automatically pause the dataset if it was previously animating.

iPhone: To go to the next or previous clip in the playlist, tap the Next or Prev icons, respectively. Or, you can go to the Datasets tab and select the desired clip.

iPad: In portrait mode, the playlist is shown by tapping the Playlist button located in the toolbar. In landscape mode, the playlist is shown to the left of the Presentation controls. To select a new clip, simply tap on the name of a clip in the list. Or, you can go to the Datasets tab and select the desired clip.

## Datasets

To access the current playlist or the SOS library of datasets, tap on the Dataset icon located in the tab bar.

Tap on the Playlist button to view the current playlist that is loaded on the SOS system. To load a particular dataset from the playlist onto the sphere, simply tap on the name of the dataset.

To load a new playlist from disk onto the SOS system, tap on the Load (iPhone) or Load Playlist (iPad) button. This will display a list of all playlists in the sosrc directory. Select a playlist and it will automatically get loaded onto the system.

To view other datasets in the SOS library, tap on the Library button and then select a library from the list. This will bring up a list of all the datasets in the selected library. To load a dataset from the selected library onto the sphere,

simply tap on the name of the dataset. Note that selecting a library category and/or a library dataset does not erase or alter the playlist that was originally loaded onto the system. You can always go back to your particular playlist by tapping the Playlist button.

iPad: When in Presentation mode, you can view the current playlist without having to jump over to the Datasets tab. Note that the datasets shown in the playlist will reflect the datasets that are shown in the Datasets tab. For example, in the Datasets tab, if you have selected the astronomy library, the astronomy playlist will show up in the Playlist section of the Presentation tab. On the other hand, if you have tapped the Playlist button in the Datasets tab, the datasets of the currently loaded playlist will show up in the Playlist section of the Presentation tab.

## Web Page

To view the Science on a Sphere Data Catalog and the rest of the SOS website, tap on the Web Page icon located in the tab bar.

## Alignment

**NOTE: Using the alignment controls without understanding how projector alignment works, or accidentally tapping on alignment controls can cause the sphere to become completely unaligned.**

To perform alignment of the projectors on the sphere, tap on the Settings icon located in the tab bar and select the Alignment option. The sphere will automatically display a white grid against a red background.

The Alignment interface is divided into three clearly labeled sections (Red Ball, Grid, and Vertex Tweaking) to facilitate greater ease in stepping through the alignment procedure. Please refer to the “Projector Alignment for Science On a Sphere (SOS) Using an iPhone, iPod Touch, or iPad” Manual for complete information on the alignment controls and how to perform projector alignment.

### Setting a Password

Before beginning alignment, you may want to set an alignment password to prevent unintended use of the alignment interface. To do this, tap on the Settings icon located in the tab bar and then select Alignment Password to set a password.



## Auto Run

To run Science on a Sphere in automatic presentation mode, tap on the Settings icon located in the tab bar, and then set the ON/OFF switch in the Auto Run section to ON.

**NOTE: If you choose to turn Auto Run mode on or off via your portable device, please make sure that Auto Run mode is not already running on the main SOS Stream GUI.**

# Troubleshooting

## Wi-Fi

If you are experiencing problems with the Wi-Fi connection, try tapping on Settings > Wi-Fi and turn Wi-Fi off and then on again. Then, try to reconnect to the SOS computer via the SOS Settings page as detailed above.

For more tips on troubleshooting Wi-Fi networks and connections with iOS devices, please see: <http://support.apple.com/kb/ts1398>

## Contact

Please contact [sos.gsd@noaa.gov](mailto:sos.gsd@noaa.gov) if you have any questions regarding the SOS Remote App.